

**Application No.: 10/500,875**

**IN THE DRAWINGS**

Please amend Figures 32-35 to include the legend "Prior Art". Replacement figures for Figures 32-35 are included herewith.

## REMARKS

### **I. Introduction**

In response to the Office Action dated September 30, 2005, Applicants have amended claims 1, 3-4, 7-8, 10-17, 20-21, 23-24, 26-34, 36, and 38 to address the rejection of the same under 35 U.S.C. § 112. Claim 2 has been cancelled. Additionally, Applicants have amended Figures 32-35 to include the legend "Prior Art". Also, Applicants have amended the specification to more particularly refer to Figures 3(a) and 3(b), 20(a) and 20(b), 26(a) and 26(b), 33(a) and 33(b), and 34(a) and 34(b) in the "Brief Description of the Drawings". No new matter has been added.

It is noted that the amendments to the foregoing claims are not intended to further limit the scope of the claims, but only to clarify the subject matter of the claims in order to overcome the 35 U.S.C. § 112, second paragraph rejection. Also, the foregoing amended claims were indicated to be allowable if rewritten into independent format. It is respectfully submitted that claims 1 and 3-44 are now in condition for allowance.

### **II. The Rejection Of Claims 1-44 Under 35 U.S.C. § 112**

Claims 1-44 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants respectfully traverse this rejection for at least the following reasons.

#### **A. Claims 1 and 26**

Referring first to claim 1, the Examiner asserts that it is "unclear what the given rate on line 16 is, where the first current comes from, how the circuit element can allow the first current flow on line 4, and how the recitation of first filtering means, circuit element, current generating means, and second filtering means is read on the preferred embodiment." Claim 1, as amended, recites, that

“said given rate is a positive number smaller than 1.” This claimed subject matter is disclosed, for example, in the specification on page 5, lines 23-24. Claim 26 has been similarly amended.

Furthermore, the “first filtering means,” “circuit element,” “current generation means,” and “second filtering means” recited in claims 1 and 26 are disclosed, for example at page 13, line 20 through page 14, line 15, and in Figures 1 and 2. In particular, capacitive element 312 and transistor 311A correspond to the “first filtering means”; transistor 311A corresponds to the “circuit element”; current mirror circuit 32A corresponds to the “current generating means”; and capacitive element 33 corresponds to the “second filtering means.” It is respectfully submitted that the scope of pending claims 1 and 26 would be readily understood by those of ordinary skill in the art when read in light of the specification, and therefore the claims are fully compliant with the requirements of 35 U.S.C. § 112, second paragraph.

**B.     Claims 3 and 4**

Referring to claim 3, the Examiner asserts that it is unclear what the “first and second semiconductor elements” are and how the second semiconductor can “accept” the first current and second current. First, with regard to how the second semiconductor can accept the first and second current, Claim 3 has been amended to remove this recitation. Second, the “first and second semiconductor elements” recited in claim 3 correspond to a first field effect transistor 311A providing first conductance  $gm_1$  and a second field effect transistor 321A providing second conductance  $gm_2$ , both of which comprise a current mirror circuit 32A (see, specification at page 13, line 20 to page 14, line 5.) As such, it is respectfully submitted that the rejection of pending claim 3 under 35 U.S.C. § 112, second paragraph, should be withdrawn.

Regarding claim 4, the Examiner asserts that the recitations “circuit element is a resistive element” and “said current mirror circuit accept a third current” are misdescriptive because the

recitations are inconsistent with what is recited in claim 3. Claims 3 and 4 has been amended to address this rejection, and as such, claims 3 and 4 comply with the requirements of 35 U.S.C. § 112.

C. Claim 8

The Examiner asserts that it is unclear how the bias currents can be “changed in amplitudes” since no means for providing changing function is recited in the claim. Claim 8, as amended, recites “first and second current sources” supplying “first and second bias currents.” Support for this amendment may be found in the specification at least at page 13, line 20 through page 14, line 5, and in Figure 2. Particularly, Figure 2 depicts current sources 35a and 35b corresponding to the first and second current sources, respectively.

Additionally, claim 8 recites that “a common bias control signal” is supplied from the outside. Support for this amendment may be found in the specification at least at page 15, lines 15-16 and in Figure 2. Specifically, Figure 2 depicts a common signal CS1 corresponding to the common bias control signal. In light of these amendments, it is respectfully submitted that the scope of pending claim 8 would be readily understood by those of skill in the art when read in light of the specification.

D. Claim 9

The Examiner asserts that it is unclear how the recitation “said second through nth ... second current” on lines 2-8 is read on the preferred embodiment. Applicants respectfully submit that the claimed subject matter is disclosed, for example, in Figure 14 and on page 28, lines 8-25. Particularly, Figure 14 depicts a current mirror circuit 32E, transistors 321Ab and 321Ac, and switches 322c and 322b, which correspond to “said current mirror circuit”, “said second through nth semiconductor elements”, and “switches for respective switching ... semiconductor elements”, respectively. As such, it is respectfully submitted that the rejection of pending claim 3 under 35 U.S.C. § 112, second paragraph, should be withdrawn.

E. Claims 10, 12, 15, and 17

Regarding claim 10, the Examiner alleges that it is unclear where the supplied first bias current and second bias current come from, how the circuit element can be a resistor ladder circuit, how the resistance value can correspond to the first conductance and can be changed in accordance with the change of the first conductance, and how the first conductance can be changed. Claim 10 has been amended to recite “first and second current sources” supplying “first and second bias currents” and “a common bias control signal” supplied from the outside. Support for these amendments may be found in the specification at page 13, line 20 through page 14, line 5; page 26, lines 8-19; and in Figures 2 and 13. Particularly, Figure 2 depicts a current source 35A and a current source 35B corresponding to the first and second current sources, respectively. In light of these amendments, it is respectfully submitted that the scope of pending claim 10 would be readily understood by those of skill in the art when read in light of the specification.

The Examiner asserts similar allegations in reference to claims 12, 15, and 17. Claim 12, as amended, recites a current source for supplying a bias current. Support for this amendment may be found, for example, in Figure 2 and on page 13, line 20 to page 14, line 5. Particularly, the current source corresponds to current source 35A or 35B depicted in Figure 2. The Examiner also alleges that the recitation “said first current cut off” lacks clear antecedent basis. However, the antecedent of “said first current” in claim 12 is “a first current” recited in claim 1. Thus, claim 12 complies with the requirements of 35 U.S.C. § 112.

Claim 15 has been amended to include “first and second current sources” supplying “first and second bias currents.” Support for this amendment may be found, for example, in Figure 7 and on page 19, line 23 to page 20, line 10 of the specification. The first and second current sources correspond to a current source 35b and a current source 35b’, respectively.

Claim 17 has been amended to include “first and second current sources” supplying “first and second bias currents.” Support for this amendment may be found, for example, in Figure 2 and on page 13, line 20 to page 14, line 5 of the specification. The first and second current sources correspond to a current source 35a and a current source 35b, respectively.

It is respectfully submitted that the scope of pending claims 15 and 17 would be readily understood by those of ordinary skill in the art when read in light of the specification, and therefore the claims are fully compliant with the requirements of 35 U.S.C. § 112, second paragraph.

F. Claim 11

The Examiner asserts that it is unclear where the “common bias signal” comes from, what the “basis” is, and how the converters can change the conductance on this basis. Claim 11 has been amended to recite that the common bias signal is supplied from the outside. Support for this amendment may be found, for example, in Figure 15. Particularly, Figure 15 depicts common signal CS1 corresponding to the common bias control signal claimed in claim 15. Furthermore, as amended, claim 11 removes the recitation of voltage current converters that change the first and second conductance. In light of these amendments, it is respectfully submitted that the scope of pending claim 11 would be readily understood by those of skill in the art when read in light of the specification.

G. Claim 14

The Examiner asserts that it is unclear what the “basis” on lines 6 and 18 is. Claim 14 has been amended to address this rejection, and as such, claim 14 would be readily understood by those of skill in the art when read in light of the specification.

H. Claim 16

The Examiner asserts that it is unclear what the “given time constant” is and how the inverting amplifier can have a time constant. Applicants respectfully submit that operational

amplifiers, such as inverting amplifiers, generally have an associated time constant. However, the recitation “with a given time constant” have been removed to address this rejection. As such, it is respectfully submitted that the rejection of pending claim 16 under 35 U.S.C. § 112, second paragraph, should be withdrawn.

**I. Claim 23**

The Examiner asserts that the description of the present invention is incomplete because the first low pass filter unit and the second low pass filter unit are not connected to anything and may not perform the recited function. Applicants have amended Claim 23 to recite that a low pass filter has two low pass filters according to Claim 1, and that the low pass filter receives a differential signal and outputs a differential signal. As such, it is respectfully submitted that the rejection of pending claim 16 under 35 U.S.C. § 112, second paragraph, should be withdrawn.

**J. The Remaining Claims**

The Examiner alleges that the remaining claims include a number of unclear recitations and antecedent basis problems as pointed out above. Applicant has amended the claims to particularly point out and distinctly claim the subject matter of the present invention. As such, claims 1 and 3-44 comply with the requirements of 35 U.S.C. § 112. If the Examiner is aware of additional unclear restrictions or antecedent basis problems, Applicants respectfully request that the Examiner address these specific issues.

**III. Conclusion**

Accordingly, it is urged that the application is in condition for allowance, an indication of which is respectfully solicited.

**Application No.: 10/500,875**

If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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